



KSUR

Control and monitoring unit

Valid from week of manufacture 02/2010

Description

The KSUR is a control and monitoring unit designed to control regulating fire/smoke dampers in a flexible way. The KSUR can be connected to the KSUA, or as a completely stand-alone unit. There are two damper groups and two smoke detector groups. These units can then be grouped in 1 or 2 fire zones. Each damper group and detector group can be monitored individually. The KSUR has an input for an external fire alarm and for night mode. KSUR light is a version designed for dampers only.

General

- Slave unit for KSUA.
- Two versions. KSUR light for dampers only.
- Can be used as a stand-alone unit.
- Two damper groups, four dampers.
- Two detector groups.
- 48-hour clock for damper exercises.
- External input for central fire alarm system.
- Night mode input.
- Damper position indication.
- Integrated transformer.
- Many selectable options.
- Jackable terminals.

Maximum configuration.

The KSUR can handle a total of two damper groups with a maximum of two dampers and two detector groups. In principle, any number of smoke detectors can be connected, but the number should be limited because of maintenance issues. These smoke detector groups and fire dampers can then be grouped into a maximum of two fire zones.



Installation

Designed for wall installation

Supply voltage

230 VAC 50 Hz 15VA. Protected with 2A at least.

Protection class

IP66

Ambient temperature

Max +30°C, min 0°C.

Weight

1.5 Kg

Outputs

- Sum alarm. Voltage-free changeover contact 8A max 250V. Terminal numbers 10,11,12.
- Triggered smoke detector, shared by all fire zones. Voltage-free changeover contact 8A max 250V. Terminal numbers 7,8,9.
- Damper group 1.
- Damper group 2.

Inputs

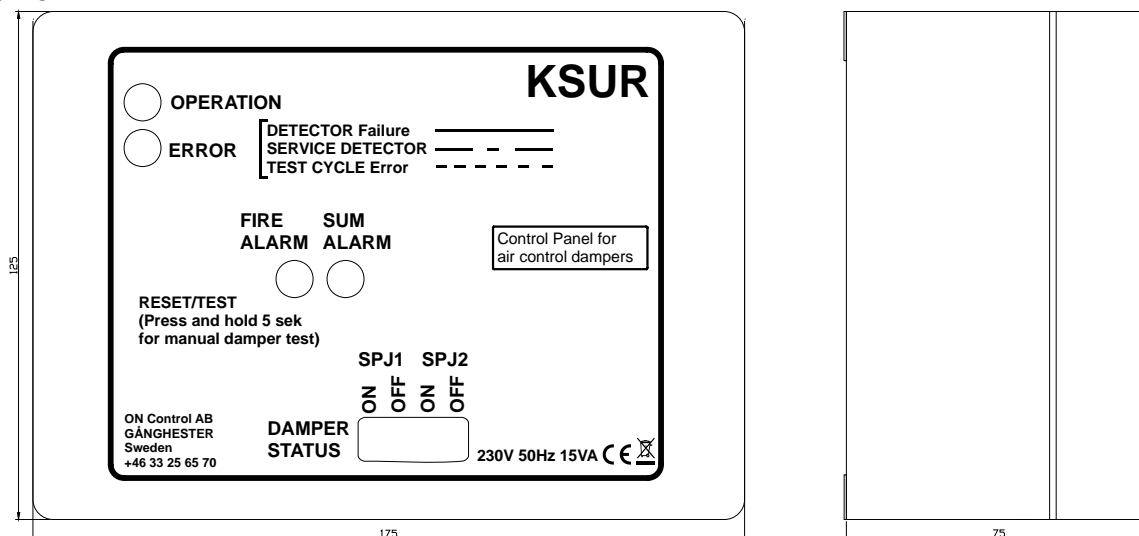
- Bus for KSUA master unit (RS485)
- Terminals 1,2. Switchable between External control unit and Night mode. For example, opening the circuit has the same effect as a triggered smoke detector (both groups affected)
- Detector 1. Terminals 3,4
- Detector 2. Terminals 5,6
- Input for 230V 50Hz

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Size

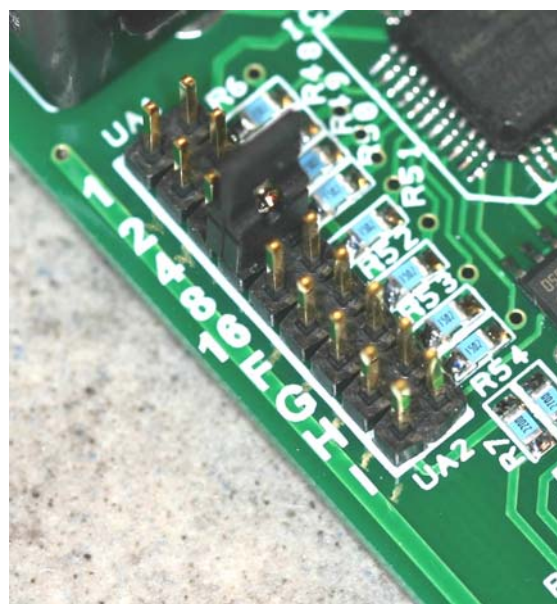


KSUB in network operation

(Jumper H off)

The KSUR will only work in a network if the KSUA has been correctly installed. To communicate, the KSUA and KSUR use a communication protocol which, at level 1, is based on RS485. The physical connections are two-wire links which must also have a ground. In other words, the units must be linked with three wires. Experience shows that the system often works with just two wires, with some installers even claiming that it works better with two wires than with three. What is important, however, is to make sure the network is connected correctly. If a number of KSUB, KSUC and KSURs are connected to the KSUA, the first and last units must be terminated by closing jumper I in the KSUB, KSUC and KSUR or jumper PL2 in the KSUA. Sometimes, the KSUA is between other units, and in this case both the terminations are in the slaves. Note that there cannot be more than two terminations in the whole network. The maximum line length is 1200m without repeater.

Address



Picture with Address 8 configured.

A KSUR will only work in the network if an address is defined. The jumpers numbered 1,2,4,8 and 16 are used to set the address. For example to use address 15, close jumpers 1,2,4 and 8 ($1+2+4+8=15$). You cannot use the same address for two units within the same network. The addresses go from 0 to 31. To set address 0, leave all positions 1,2,4,8 and 16 empty. Dampers and detectors are counted from address 0 upwards. For example address 0 DMP1+2. Address 1 DMP3+4. Address 3 DMP5+6, etc. (2 damper groups per address)

Jumpers used in network operation:

Jumper	On	Off
1,2,4,8,16	Address	
F	Actuator without mechanical "closed contact"	Actuator with mechanical "closed contact"
G	Force KSUA to daytime mode when EXT is shorted	
H	Stand-alone mode	Network mode

Fan control

If you connect a timer to input 1,2 you can control the dampers. This function can also act on the centrally controlled ventilation system, and works by starting day mode, opening the dampers, then starting and running the ventilation system while the timer is counting down. This function only works if jumpers G are on.

Smoke detectors

The smoke detectors are connected to the KSUR and are then operated by the KSUA in detector groups, which in turn control the dampers. The EXT input is logically connected to detector input 1. This means the EXT input can be used for a heat detector, for example, or an external central fire alarm system that can be configured to be part of a detector group. When you perform a reset on the KSUA all detectors are switched off for 5 seconds to reset them.

Malfunctions.

If a communication error occurs, the KSUR will take over and close the dampers after 15 seconds.

Other errors are forwarded to the KSUA for central processing.

LEDs

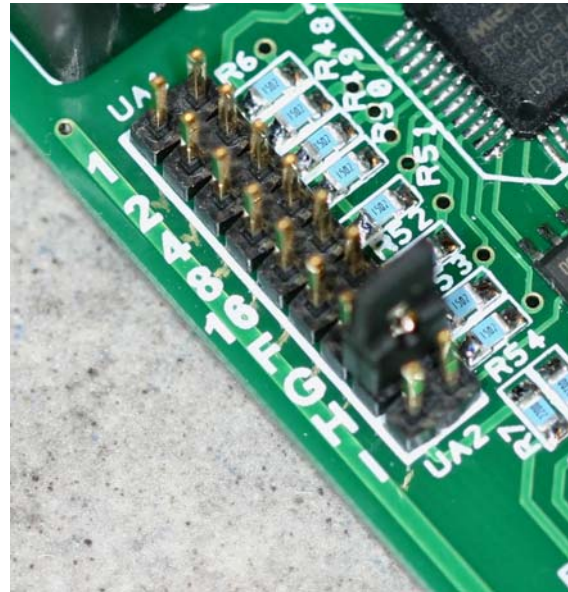
Every time a correct message is received, the Operation LED switches on or off in order to indicate that communication with the master is working correctly. The Error LED lights up if communication stops. Other LEDs work in the same way as in stand-alone mode.

Buttons

No function in network mode.

Stand-alone mode

(Jumper H on)



Picture shows jumper H on. (Stand-alone mode)

Priority handling

If an alarm (triggered detector or external fire alarm) is received during the function test, the test is ended and the unit immediately switches to alarm state.

Function test

The function test is carried out 10 hours after power is connected to the KSUR, and then every 48 hours. This means you can run the function test at night without having to switch on the unit during night-time installation. In night mode, the function test can be run without special programming. The KSUR detects the damper positions and carries out the function test in the other direction.

Manual function test

To carry out a manual function test, hold down the relevant reset button for longer than five seconds. After five seconds, the Operation and Alarm LEDs stop alternating. The test starts when you release the button.

Description of jumpers.

Overview of jumpers

Jumper	On	Off
1	Terminals 1-2 are night mode input	Terminals 1-2 are Fire Alarm input
2	Not in use.	
4	Damper SPJ2 is not in use	Both dampers are in use
8	2 Fire zones	1 Fire zone
16	Not in use.	
F	Actuators without mechanical contacts.	
G	Test dampers in sequence	Test both dampers simultaneously
H	Stand-alone operation	Network operation
I	IsBus termination ON	IsBus termination OFF

Notes

1=ON

Determines whether the EXT input is used to connect the external fire alarm system (alarm) or to close the dampers (Night mode). OFF means that if the EXT input circuit is opened, the effect is the same as if a detector had triggered. This affects zones 1 and 2 simultaneously. ON means that if the EXT input circuit is opened, the system switches to night mode (the EXT input is normally jumpered).

8=ON

Connects detector input 1 to damper group 1 and detector 2 to damper group 2. The KSUB now acts as two separate units – for example only damper group 1 is operated if smoke detector 1 is triggered. Damper

group 2 remains active as long as detector input 2 is not triggered. However, fans are stopped as soon as either of the detector inputs is triggered.

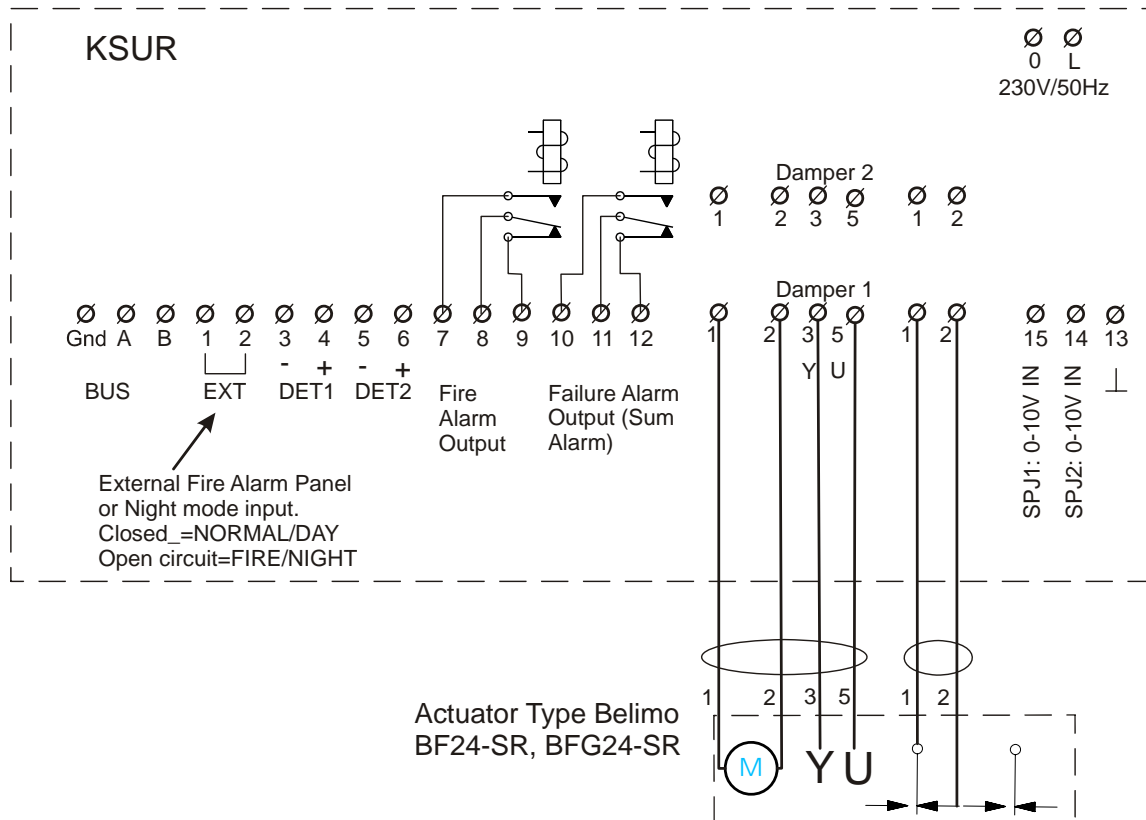
F=ON

If dampers (actuators) without mechanical off contacts are connected to KSUR put jumper F on and the analog signal will be used to sense the position of the damper. Be aware the longer time for testprocedure.

G=ON

Used to carry out the function test on one damper group at a time. Group 1 is tested first, followed by group 2.

Connection diagram



Connection of external units. Drawing is in power off condition.

230V 50Hz

Must be connected via fixed cables to a group fuse of at least 2A. The isolating switch must be positioned close to the unit. The KSUR is built with reinforced insulation, so no ground is necessary.

EXT input

The EXT input has two different applications depending on the setting of jumper 1. If the jumper is off, the input works like a triggered detector. If the jumper is on, the dampers are closed as in night mode. In both cases, EXT must be jumpered in normal operation. When the input is activated, the circuit is opened.

Relay outputs

All relays are shown in the open position. FAN is normally on. In an alarm, the sum alarm is activated and 10-11 closes for example.

Damper connection

Fire/smoke dampers are connected as shown in the diagram above.

Smoke detector inputs

The two smoke detector inputs are designed for a loop resistance of 2200 ohm (terminating resistor). Depending on the setting of jumper 8, one or both detector circuits are connected. Unused detector inputs are terminated with a resistor connected directly to the terminal. 2200 ohm, power at least 1W. See also the description of jumper settings.

KSUR Light

KSUR Light just has connections for dampers, EXT input and network. Otherwise it works like a fully-featured KSUR. For the network, the smoke detector inputs are simulated so they are always in the normal state.

Cable type for connections

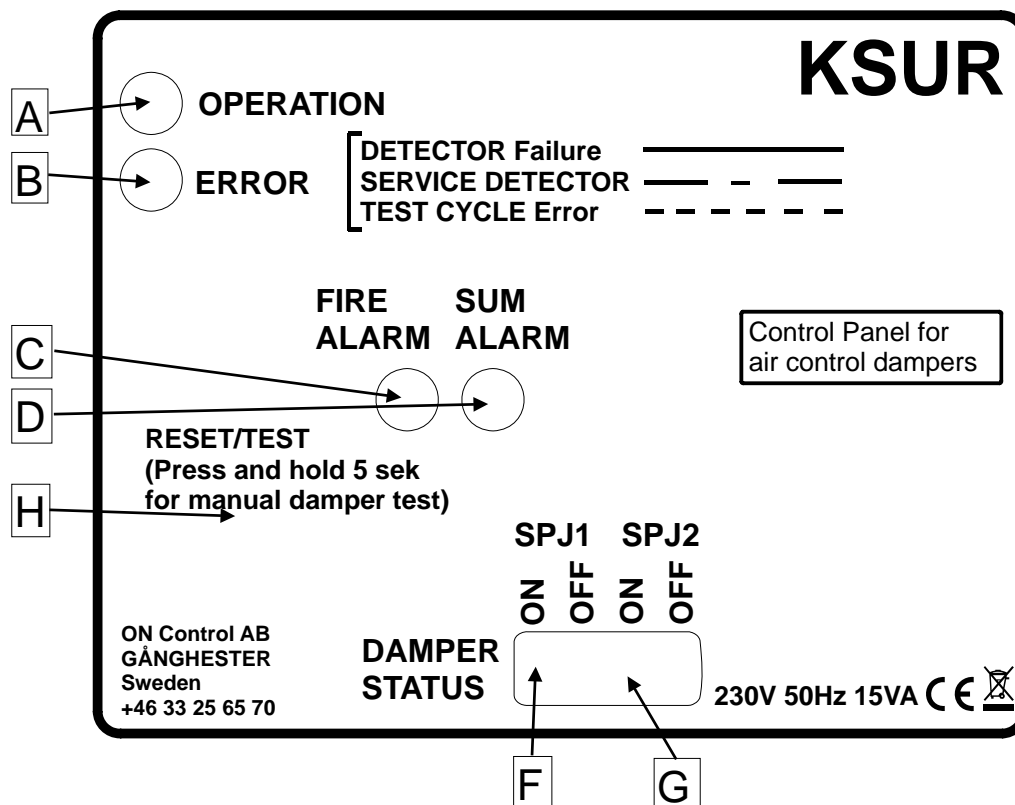
The smoke detectors are connected with twisted-pair cable separated from other parts. Telephone type cable is used, with no particular requirements in terms of area. For example, the actuator can be connected with 7G0,75 if the distance between the actuator and the KSUR is less than 200 metres. If the distance is greater, a larger area is required.

For the network screened cable it is normally in use. 1 pair for A and B connection and the screen is connected to ground terminal in KSUR

Fuses

There is a 100mAT fuse on the motherboard. The fuse is to the right of the mains transformer. The holder is the bayonet type. To remove the fuse, press down and turn a quarter turn anticlockwise.

Understanding and use



Indicators and buttons

A. Operation

Green LED showing that the unit is receiving power and indicating day/night mode. Constant = day mode. Flashing = night mode.

B. Error

This LED uses three different flashing sequences to indicate three different alarms.

- Constant if the detector loop is broken.
- Alternating short and long flashes to indicate a service alarm (dirty smoke detector). The indication is delayed by one

hour to prevent false alarms. When the alarm is reset, the delay is deactivated to make it possible to confirm immediately that the alarm has been cleared.

- Rapid flashes if the 48-hour test fails. The following are tested for errors.
 - The dampers in both damper groups close within 30 seconds.
 - The actuator contacts are correctly closed with the dampers in the closed position.
 - The dampers open within 200 seconds.
 - The actuator open position is verified by the analog signal.

C. Triggered smoke detector

The same LED covers both smoke detector loops. If the LED is red, a detector has been triggered. The associated relay is closed.

D. Sum alarm

The sum alarm is indicated by the red LED and the associated relay output is closed when the following events occur:

- Smoke detector 1 or 2 triggered.
- EXT input activated. (Jumper 1=off)
- Break in any of the cable loops.
- Error during function test.
- Service alarm in any of the detector loops.
- Connection error.

F. Reset/test

Button to reset the entire alarm. While the button is pressed, the detector outputs are disconnected to allow any triggered smoke detectors to be reset.

If you keep the button pressed for at least 5 seconds, the function test starts when you release the button. After five seconds, the Operation and Alarm LEDs stop alternating and the Operation LED lights up instead. (The function test is usually initiated by the timer every 48 hours)

F and G. Dampers

The green and red LEDs indicate the normal position/alarm position respectively for the relevant damper. The normal position is depending of the input signal 0-10V. If the damper has fully open signal the LED indicator is steady green. The LED is then flashing with less ON signal if the damper going to closed position. In closed position the LED is OFF.

Troubleshooting

"ERROR" LED lights or flashes.

- Look at the pattern of flashing to identify the error.

If the LED is constantly lit, there is a break in the detector loop.

Check:

- The terminating resistor in the last detector of the loop with the problem. It should be 2200 ohm, 1W.
- If the input is not used, a resistor of 2200 ohm must be installed to replace the detectors.

- Break in cable
- Loose contact in the detector bases.
- Check the connections to the detectors.
- Polarity!

Alternating short and long flashes indicate a service alarm (dirty smoke detector)

Check:

- For dirt on one or more detectors. Indicated by a yellow LED on the affected detector if the detector has a service alarm function. Vacuum-clean or, in the worst case, replace the detector head.

Rapid flashes if the 48-hour test fails.

Check:

- That the right number of dampers is connected for the selected mode. If only one damper is used, it must be connected to DMP1 and jumper 4=On.
- That the dampers open and that the green LED is normal.
- Carry out a manual function test and check that the dampers operate within 30 seconds. The red LED lights up. The dampers must then return to the open position within 200 seconds and the green LED lights up.

"FIRE ALARM" LED lights.

Check:

- That the EXT input is jumpered or closed by an external control unit.
- For a short-circuit in one of the detector loops.
- An alarm from a detector is indicated with an LED on the detector.

"SUM ALARM" LED lights.

Check:

- For other alarms indicated by the LEDs.
- That no damper has operated incorrectly.

The dampers do not open.

Check:

- That there are no other alarms on the front panel.
- That the control signal is correct. 0 V controls the damper to closed position.
- That the damper motor is connected correctly.

Disposal of old Electrical & Electronic Equipment (Applicable throughout the European Union and other European countries with separate collection programs)



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